

The claims as amended recite a gas purifying process using a catalyst comprising (i) a fire-resistant inorganic compound having platinum, palladium and rhodium deposited on the compound and (ii) a metallic sulfate having iridium deposited thereon. The amended claims are supported by the specification at, for example, pages 16 to 25.

The rejection of claims 21 and 22 as being anticipated by Nakatsuji et al (EP 0 624 393) is traversed and has been overcome by amendment. Claims 21 and 22 as amended make clear that the claimed catalyst has an inorganic compound on which is deposited platinum, palladium and/or rhodium, and a metallic sulfate with iridium deposited thereon. Nakatsuji discloses a catalyst having a cerium oxide supported on a solid carrier. Accordingly, Nakatsuji does not anticipate claims 21 and 22.

The rejection of claims 18-23 as being obvious over Lauder (U.S. Patent No. 4,049,583) in view of Shigeru et al. (Japanese Patent Publication 7-80315) is traversed. Lauder and Shigeru do not disclose or suggest the claimed catalyst has an inorganic compound on which is deposited platinum, palladium and/or rhodium, and a metallic sulfate with iridium deposited thereon.

Lauder discloses a catalyst that lacks sulfur and does not teach depositing on an inorganic compound platinum, palladium or rhodium. The catalyst disclosed by Lauder has an ABO_3 crystal structure, wherein the sites of Type A are occupied by cations of at least two different metals each occupying at least 1% of the Type A cation sites and having an ionic radius between 0.8 and 1.65 Å, and from about 1% up to about 20% of the sites of Type B are occupied by ions of platinum group metals. The platinum group

metals are part of the catalyst crystal structure. The remaining sites of Type B in the ABO_3 crystal structure are occupied by ions of non-platinum group metals having ionic radii between about 0.4 and 1.4 Å.

In contrast to Lauder, the catalyst recited by amended claims 18-23 does not have the special ABO_3 crystal structure as does the catalyst of Lauder. Further, the catalyst recited in claims 18-23 is not incorporated into a crystal structure but is rather deposited on the same, i.e., iridium is deposited on metallic sulfate. Accordingly, the catalyst of the present application is totally different from the catalyst of Lauder.

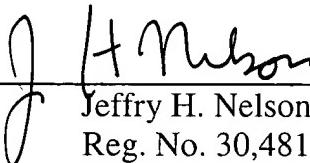
Shigeru does not disclose a catalyst including a metallic sulfate having iridium deposited thereon. There is no suggestion, teaching or motivation evident from the prior art to combine Lauder and Shigeru to create the claimed invention. Further, it is evident that when compositions are deposited on a catalyst the effects vary in accordance with the makeup of the compositions in unpredictable ways. In view of the uncertainties in this art, it would not have been obvious to a person of ordinary skill in the art to form the claim invention based on the teachings of Lauder and Shigeru.

The rejections for anticipation of obviousness should be withdrawn. If any small matter remains outstanding, the Examiner is requested to telephone applicants' attorney. Prompt reconsideration and allowance of this application is requested.

Attached hereto is a marked-up version of the changes made to the specification and claim(s) by the current amendment. The attached page(s) is captioned "Version With Markings To Show Changes Made."

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE
IN THE CLAIMS

18. (Twice Amended) An exhaust-gas purifying process comprising [the steps of]:
preparing a catalyst for purifying exhaust gas, said catalyst comprising (i) a fire-
resistant inorganic compound having at least one element selected from the group
consisting of platinum, palladium and rhodium deposited thereon and (ii) a metallic
sulfate having iridium deposited thereon; [by forming the catalyst of iridium, a rare earth
metal oxide, and sulfur; and at least one element selected from a group consisting of
calcium, strontium and barium, as catalyst active substances, wherein the iridium forms a
complex oxide with said at least one element;]
setting an exhaust-gas temperature in a range of 200°C to 700°C at an inlet to the
catalyst for purifying the exhaust gas; and

directing the exhaust gas from an internal combustion engine through the catalyst
for purifying the exhaust gas so as to reduce nitrogen oxides in the exhaust gas.

19. (Twice Amended) An exhaust-gas purifying process comprising [the steps of]:
preparing a catalyst for purifying exhaust gas [by forming the catalyst of iridium,
a rare earth metal oxide, and sulfur; and at least one element selected from a group
consisting of calcium, strontium and barium, as catalyst active substances, wherein the
iridium forms a complex oxide with said at least one element] comprising (i) a fire-
resistant inorganic compound having at least one element selected from the group

consisting of platinum, palladium and rhodium deposited thereon and (ii) a metallic sulfate having iridium deposited thereon;

setting an exhaust-gas temperature in a range of 200°C to 700°C at an inlet to the catalyst for purifying the exhaust gas; and

directing the exhaust gas from an internal combustion engine through the catalyst for purifying the exhaust gas so as to reduce hydrocarbons, carbon monoxide and nitrogen oxides in the exhaust gas from the internal combustion engine.

[24] 20. (Twice Amended) An exhaust-gas purifying process comprising [the steps of]:

preparing a catalyst comprising [iridium, a rare-earth metal and sulfur, wherein the rare-earth metal is an oxide containing at least one element selected from a group consisting of cerium, lanthanum, yttrium, neodymium and praseodymium] a fire-resistant inorganic compound having at least one element selected from the group consisting of platinum, palladium and rhodium deposited thereon, and a metallic sulfate having iridium deposited thereon;

setting an exhaust-gas temperature in a range of 200°C to 700°C at an inlet to the catalyst for purifying exhaust gas; and

directing an exhaust gas from an internal combustion engine through the catalyst to purify the exhaust gas and reduce nitrogen oxides in the exhaust gas.

[25] 21. (Twice Amended) An exhaust-gas purifying process comprising [the steps of]:

preparing a catalyst comprising [iridium, a rare-earth metal and sulfur, wherein the rare-earth metal is an oxide containing at least one element selected from a group consisting of cerium, lanthanum, yttrium, neodymium and praseodymium;] a fire-resistant inorganic compound having at least one element selected from the group consisting of platinum, palladium and rhodium deposited thereon, and a metallic sulfate having iridium deposited thereon;

setting an exhaust-gas temperature in a range of 200°C to 700°C at an inlet to the catalyst; and

directing an exhaust gas from an internal combustion engine to pass through the catalyst for purifying exhaust gas so as to reduce hydrocarbons, carbon monoxide and nitrogen oxides in the exhaust gas from the internal combustion engine.

[26] 22. (Twice Amended) An exhaust-gas purifying process comprising [the steps of]:

preparing a catalyst comprising [iridium, a rare-earth metal and sulfur, wherein the rare-earth metal is a composite oxide containing at least one element selected from a group consisting of cerium, lanthanum, yttrium, neodymium and praseodymium, and at least one element selected from a group consisting of manganese, iron, cobalt, nickel, copper and zinc,] a fire-resistant inorganic compound having at least one element selected from the group consisting of platinum, palladium and rhodium deposited thereon, and a metallic sulfate having iridium deposited thereon;

setting an exhaust-gas temperature in a range of 200°C to 700°C at an inlet to the catalyst for purifying exhaust gas; and

directing an exhaust gas from an internal combustion engine through the catalyst to purify the exhaust gas and reduce nitrogen oxides in the exhaust gas.

[27] 23. (Twice Amended) An exhaust-gas purifying process comprising [the steps of]:

preparing a catalyst comprising [iridium, a rare-earth metal and sulfur, wherein the rare-earth metal is a composite oxide containing at least one element selected from a group consisting of cerium, lanthanum, yttrium, neodymium and praseodymium, and at least one element selected from a group consisting of manganese, iron, cobalt, nickel, copper and zinc] a fire-resistant inorganic compound having at least one element selected from the group consisting of platinum, palladium and rhodium deposited thereon, and a metallic sulfate having iridium deposited thereon;

setting an exhaust-gas temperature in a range of 200°C to 700°C at an inlet to the catalyst; and

directing an exhaust gas from an internal combustion engine to pass through the catalyst for purifying exhaust gas so as to reduce hydrocarbons, carbon monoxide and nitrogen oxides in the exhaust gas from the internal combustion engine.